

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Integral Consulting Inc.
Suite 190
285 Century Place
Louisville CO 80027

Report Date: December 23, 2016

Project: Solvay

Submittal Date: 12/02/2016

Group Number: 1739986

State of Sample Origin: NJ

Client Sample Description

V915 Grab Water

Field Blank Grab Water

Lancaster Labs

(LL) #

8726063

8726064

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Solvay
Electronic Copy To Solvay
Electronic Copy To Integral Consulting Inc.
Electronic Copy To Integral Consulting Inc.

Attn: Mitch Gertz
Attn: Mark Christensen
Attn: Erin Palko
Attn: Craig Hutchings

Respectfully Submitted,


Stacy L. Hess
Project Manager

(717) 556-7236

Sample Description: V915 Grab Water

LL Sample # WW 8726063

Project Name: Solvay

LL Group # 1739986

Account # 20003

Collected: 11/30/2016 15:00 by MC

Integral Consulting Inc.

Suite 190

Submitted: 12/02/2016 09:10

285 Century Place

Reported: 12/23/2016 09:30

Louisville CO 80027

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Misc. Organics		EPA 537 Rev 1.1	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	80	0.5	2	1
10954	Perfluorononanoic acid	375-95-1	470	6	20	10
10954	Perfluorodecanoic acid	335-76-2	5	0.5	2	1
10954	Perfluoroundecanoic acid	2058-94-8	15	1	3	1
10954	Perfluorododecanoic acid	307-55-1	N.D.	0.5	2	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.	0.5	2	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.	0.5	2	1
10954	Perfluorohexanoic acid	307-24-4	6	0.5	2	1
10954	Perfluoroheptanoic acid	375-85-9	8	0.5	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	0.7	2	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	1	3	1
10954	Perfluoro-octanesulfonate	1763-23-1	3 J	2	6	1

Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAS in Water by LC/MS/MS	EPA 537 Rev 1.1	1	16340008	12/09/2016 08:36	Marissa C Drexinger	1
10954	PFAS in Water by LC/MS/MS	EPA 537 Rev 1.1	1	16340008	12/09/2016 22:02	Atulbhai Patel	10
14091	PFAA Water Prep	EPA 537 Rev 1.1	1	16340008	12/06/2016 14:40	Devon M Whooley	1

*=This limit was used in the evaluation of the final result

Sample Description: Field Blank Grab Water

LL Sample # WW 8726064

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LL Group # 1739986

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10954	Perfluorononanoic acid	375-95-1	N.D.	0.6	2	1
10954	Perfluorodecanoic acid	335-76-2	N.D.	0.5	2	1
10954	Perfluoroundecanoic acid	2058-94-8	N.D.	1	3	1
10954	Perfluorododecanoic acid	307-55-1	N.D.	0.5	2	1
10954	Perfluorotridecanoic acid	72629-94-8	N.D.	0.5	2	1
10954	Perfluorotetradecanoic acid	376-06-7	N.D.	0.5	2	1
10954	Perfluorohexanoic acid	307-24-4	N.D.	0.5	2	1
10954	Perfluoroheptanoic acid	375-85-9	N.D.	0.5	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	0.7	2	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	1	3	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	2	6	1

Sample Comments

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Quality Control Summary

Client Name: Integral Consulting Inc.
Reported: 12/23/2016 09:30

Group Number: 1739986

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 16340008	Sample number(s): 8726063-8726064		
Perfluorooctanoic acid	N.D.	0.5	2
Perfluorononanoic acid	N.D.	0.6	2
Perfluorodecanoic acid	N.D.	0.5	2
Perfluoroundecanoic acid	N.D.	1	3
Perfluorododecanoic acid	N.D.	0.5	2
Perfluorotridecanoic acid	N.D.	0.5	2
Perfluorotetradecanoic acid	N.D.	0.5	2
Perfluorohexanoic acid	N.D.	0.5	2
Perfluoroheptanoic acid	N.D.	0.5	2
Perfluorobutanesulfonate	N.D.	0.7	2
Perfluorohexanesulfonate	N.D.	1	3
Perfluoro-octanesulfonate	N.D.	2	6

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ng/l	ng/l	ng/l	ng/l					
Batch number: 16340008	Sample number(s): 8726063-8726064								
Perfluorooctanoic acid	200	194.11	200	191.01	97	96	70-130	2	30
Perfluorononanoic acid	200	169.52	200	177.16	85	89	70-130	4	30
Perfluorodecanoic acid	200	170.85	200	194.57	85	97	70-130	13	30
Perfluoroundecanoic acid	200	157.04	200	165.45	79	83	70-130	5	30
Perfluorododecanoic acid	200	170.14	200	187.85	85	94	70-130	10	30
Perfluorotridecanoic acid	200	200.06	200	195.18	100	98	70-130	2	30
Perfluorotetradecanoic acid	200	211.13	200	203.36	106	102	70-130	4	30
Perfluorohexanoic acid	200	176.99	200	202.99	88	101	70-130	14	30
Perfluoroheptanoic acid	200	167.91	200	170.17	84	85	70-130	1	30
Perfluorobutanesulfonate	176.8	160.84	176.8	161.75	91	91	70-130	1	30
Perfluorohexanesulfonate	189.2	172.16	189.2	174.34	91	92	70-130	1	30
Perfluoro-octanesulfonate	191.2	176.7	191.2	181.13	92	95	70-130	2	30

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Integral Consulting Inc.
Reported: 12/23/2016 09:30

Group Number: 1739986

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16340008	Sample number(s): 8726063-8726064 UNSPK: 8726063									
Perfluorooctanoic acid	79.77	199.34	253.13			87		70-130		
Perfluorononanoic acid	465.79	199.34	637.23			86		70-130		
Perfluorodecanoic acid	4.62	199.34	179.57			88		70-130		
Perfluoroundecanoic acid	15.12	199.34	181.42			83		70-130		
Perfluorododecanoic acid	N.D.	199.34	201.9			101		70-130		
Perfluorotridecanoic acid	N.D.	199.34	223.49			112		70-130		
Perfluorotetradecanoic acid	N.D.	199.34	172.69			87		70-130		
Perfluorohexanoic acid	6.45	199.34	258.14			126		70-130		
Perfluoroheptanoic acid	7.68	199.34	184.92			89		70-130		
Perfluorobutanesulfonate	N.D.	176.22	172.51			98		70-130		
Perfluorohexanesulfonate	N.D.	188.58	194.84			103		70-130		
Perfluoro-octanesulfonate	3.00	190.57	192.24			99		70-130		

*- Outside of specification

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(1) The result for one or both determinations was less than five times the LOQ.

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P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



**Lancaster Laboratories
Environmental**

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 20003

Group # 1739986

Sample # 8726063-64

COC #515446

[illegible]

Client: Solray

Delivery and Receipt Information

Delivery Method:	<u>Fed Ex</u>	Arrival Timestamp:	<u>12/02/2016 9:10</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace \geq 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Cathy Murphy (10960) at 15:19 on 12/02/2016

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	2.0	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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